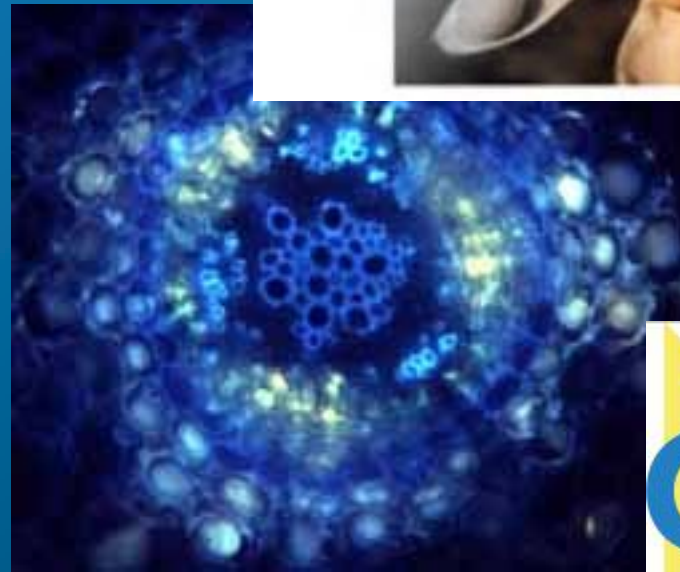
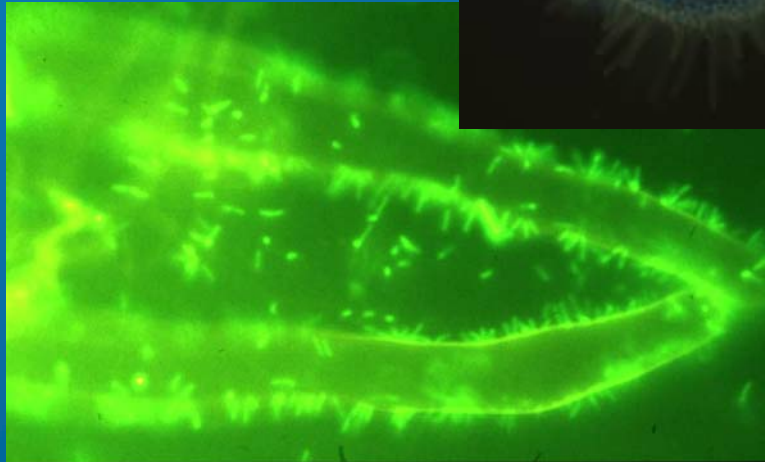
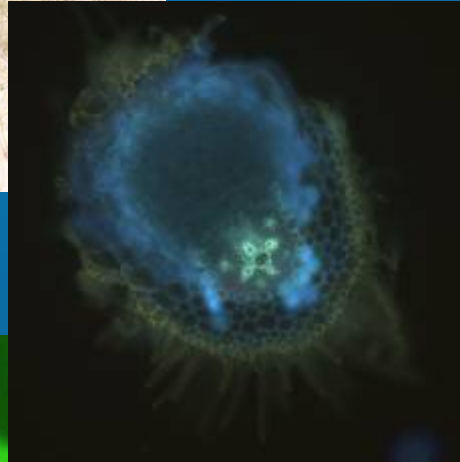
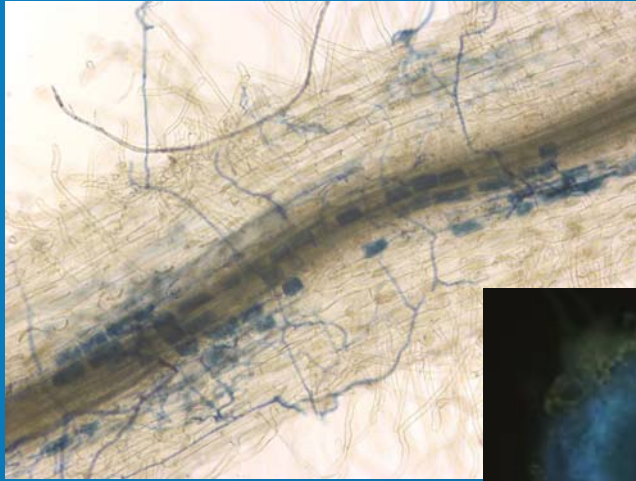


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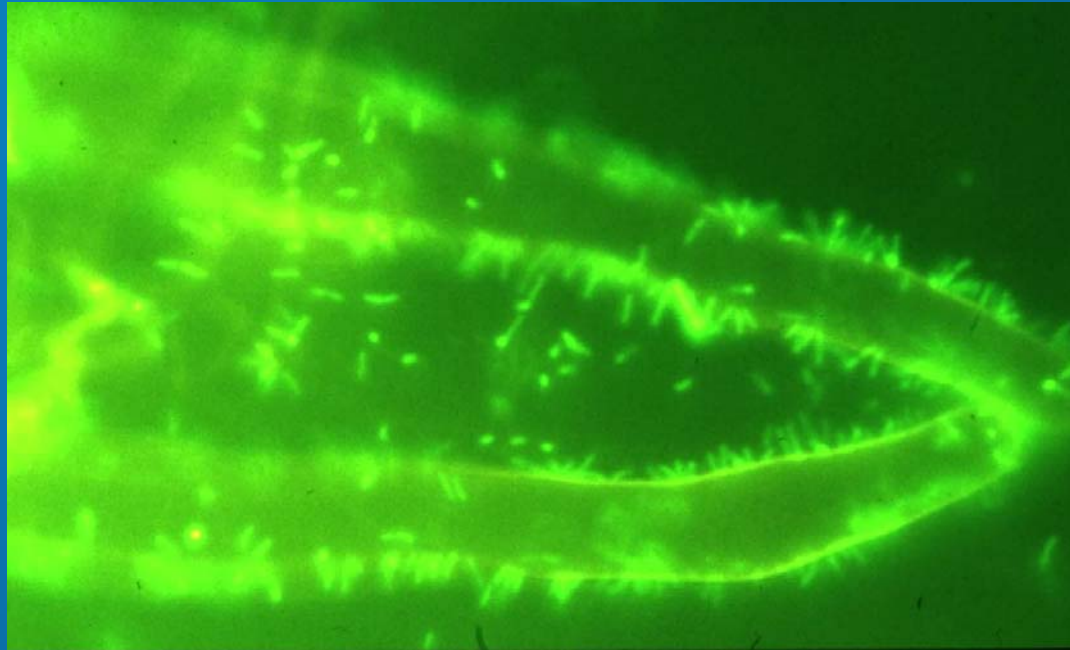
Roots & their Microbial Colonisers



Lisette Pregelj – Education and
Outreach Manager

Soil Micro-organisms

- **Plant roots encounter hundreds of micro-organisms in the soil**
 - **Bacteria**
 - **Fungi**
 - **Nematodes**
- **These microbes colonise the outside of plant roots**
- **Can be pathogenic or symbiotic**



- **Plant roots provide food for microbes**
 - **Dead roots and cells**
 - **Mucilage (sugars)**
 - **Exudates (organic acids, sugars and amino acids)**

Pathogenic Microbes

- Attack plants
- Cause disease



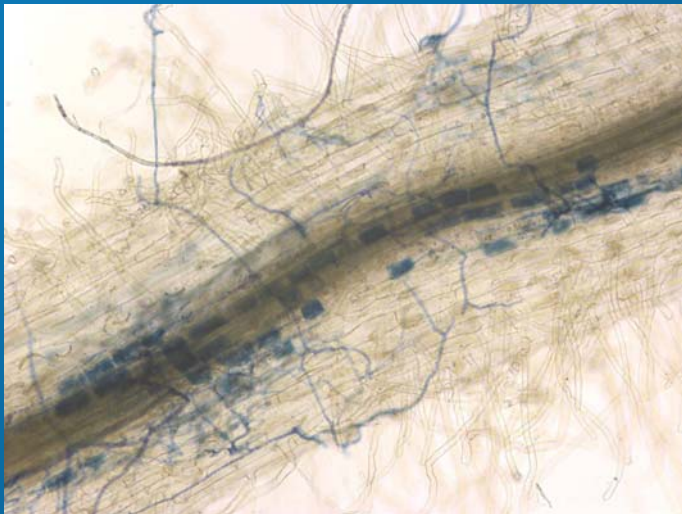
Arabidopsis infected with
Fusarium oxysporum



Phytophthora sporangia
emerging from soybean roots

Symbiotic Microbes

- Some microbes benefit plants by providing important nutrients
- These are called symbionts
- They in turn survive better

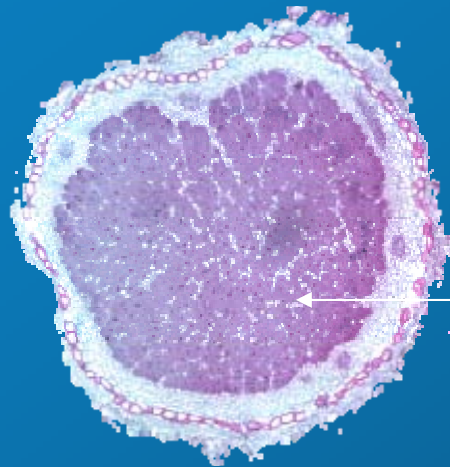


Mycorrhiza in soybean roots

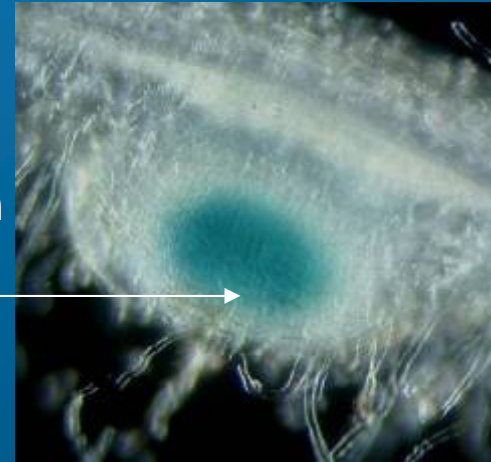


**Bacteria living in nodules
on soybean roots**

Rhizobia



Rhizobia living in legume nodules



- **Symbiotic bacteria**
- **Can be free living in the soil or living in legume root nodules**
- **Those living in nodules receive sugar from the plant and in return 'fix' nitrogen for the plant**

CILR

- **University of Queensland**
- **Australian National University**
- **University of Melbourne**
- **University of Newcastle**



CILR

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